

Claims

- [c1] 1. A compartment seal comprising:
- a body member having an opening therethrough, said body member having a plurality of openings circumferentially arranged around said opening, said body member having a periphery sized larger than an aperture in a wall, said plurality of openings providing a means for attaching said body member to said wall; and
- a seal element secured to said body member, said seal element configured to have an aperture therethrough, said aperture in said seal element being in general alignment with said opening in said body member, said aperture in said seal element having a diameter less than a diameter of said opening in said body member, said seal element configured for sealingly engaging tubing passing through said aperture in said seal element, said seal element includes a generally conically shaped portion about said aperture, wherein said generally conical shaped portion is defined at one end having one of at least one convolute defined by a perimeter smaller than said opening and larger than a largest diameter defining said conically shaped portion and an annular portion configured to slidably and sealably

engage an air horn therethrough.

- [c2] 2. The compartment seal of claim 1 wherein said opening in said body member is in general alignment with said aperture in said wall, said plurality of openings are aligned with a surface of said wall defining said aperture for fastening said body member to said wall.
- [c3] 3. The compartment seal of claim 1 wherein said body member is substantially planar on at least one surface for attachment to an opposing surface.
- [c4] 4. The compartment seal of claim 1 wherein said seal element is generally nonplanar.
- [c5] 5. The compartment seal of claim 1 wherein said at least one convolute defined by a perimeter smaller than said opening and larger than a largest diameter defining said conically shaped portion includes two contiguous concentric convolutes having one end thereof extending from said opening and an opposite end extending from said generally conically shaped portion.
- [c6] 6. The compartment seal of claim 5 wherein each of said two contiguous concentric convolutes and said conical portion is defined with each having different diameters, said conical portion defined with a progressively different diameter along a length thereof.

- [c7] 7. The compartment seal of claim 6 wherein said aperture in said seal element is configured to be manually cut having a diameter which is about ten percent smaller than a diameter of tubing passing therethrough.
- [c8] 8. The compartment seal of claim 7 wherein said conical member extends further from a plane defining said body member than said first and second convolutes.
- [c9] 9. The compartment seal of claim 8 wherein said second convolute extends further from said plane than said first convolute.
- [c10] 10. The compartment seal of claim 7 wherein said first convolute is defined by a first leg and a second leg substantially parallel to each other, said first leg defining a larger diameter of said aperture than said second leg.
- [c11] 11. The compartment seal of claim 10 wherein said second convolute is defined by a third leg and a fourth leg substantially parallel to each other, said third leg defining a larger diameter of said aperture than said fourth leg.
- [c12] 12. The compartment seal of claim 11 wherein said generally conically shaped portion is pulled to gain access to either of said second and fourth legs to manually cut

therethrough to form said aperture.

[c13] 13. The compartment seal of claim 1 wherein said seal element is further defined by a first flat portion configured in a U-shape having a first and second leg defining an interior portion of said U-shape secured to either side of said body member.

[c14] 14. The compartment seal of claim 13 wherein said body member includes another plurality of apertures circumferentially disposed proximate said opening, said another plurality of apertures providing a means for axial and rotational retention of seal element relative to said body member, whereby said another plurality of apertures provides fluid communication between said first and second legs of said first flat portion.

[c15] 15. The compartment seal of claim 14 wherein said fluid communication includes one of adhesive and injection molding material.

[c16] 16. The compartment seal of claim 1 wherein said tubing includes one of an oil line, a fuel line, electrical wiring, and said air horn.

[c17] 17. The compartment seal of claim 1 wherein said body member is fabricated from metal.

- [c18] 18. The compartment seal of claim 17 wherein said seal element is molded upon said body member.
- [c19] 19. The compartment seal of claim 18 wherein said body member includes an adhesion-promoting substance carried on a marginal portion defining said opening thereof for enhancement of the level of bond strength of said sealing element thereto.
- [c20] 20. The compartment seal of claim 18 wherein said seal element is secured to said body member using a plurality of apertures circumferentially disposed proximate said opening of said body member.
- [c21] 21. The compartment seal of claim 1 wherein said annular portion configured to slidably and sealably engage an air horn therethrough is defined by an exterior surface having a circumferential groove configured therein and an interior surface chamfered at opposing ends.
- [c22] 22. The compartment seal of claim 21 wherein said circumferential groove is configured to retain a fastener therein, said fastener configured to compress said interior surface around said air horn.
- [c23] 23. The compartment seal of claim 21 wherein said generally conically shaped portion is defined by an inner surface and outer surface, said inner surface extending

from said opening at an angle of about 42 degrees and said outer surface extending from said opening at an angle of about 45 degrees relative to an axis normal to a plane defining said body member.

- [c24] 24. A method for a compartment seal having a variably sized aperture, the method comprising:
- configuring a body member having an opening therethrough and having a plurality of openings circumferentially arranged around said opening, said body member having a periphery sized larger than an aperture in a wall, said plurality of openings providing a means for attaching said body member to said wall;
 - configuring a said seal element to have an aperture therethrough being in general alignment with said opening in said body member, said seal element including a generally conically shaped portion, wherein said generally conical shaped portion is defined at one end having at least one convolute defined by a perimeter smaller than said opening and larger than a largest diameter defining said conically shaped portion;
 - securing said seal element to said body member; and
 - cutting said seal element to form said aperture to be formed in said seal element having a diameter less than a diameter of said opening in said body member for sealingly engaging tubing passing through said aperture

in said seal element.

[c25] 25. The method of claim 24 wherein each of said at least one convolute is contiguous and concentric with respect to each other, said at least one convolute and said conical portion are each configured having different diameters, said conical portion defined with a progressively different diameter along a length thereof.

[c26] 26. The method of claim 25 wherein said cutting said seal element to form said aperture in said seal element is manually cut having a diameter which is about ten percent smaller than a diameter of tubing passing therethrough.